FRICON USA
THE NEW REFRIGERATION AGE

FLCH-8S SERIES, A.1

LARGE-SIZED MODULAR CHILLER

STANDARD SERIES, AIR COOLED CONDENSER

SCROLL COMPRESSORS

90-180 TR PER UNIT / 720 TR PER SET

AIR CONDITIONING LINE

The new FLCH-8S: FriconUSA Large-Sized Modular Chiller, 8 Series Standard, air cooled condenser, is designed to meet most of the demands of medium to large range capacity for air conditioning. Its flexible innovative design allows the modules to work independently in capacities between 90 to 180 TR or grouped in different combinations of sizes to form one or various sets and meet capacity requirements up to 720 TR per set. The quality, high efficiency up to 11.8 EER and exceptional IPLV, according to AHRI Standard 550/590, ensures our customers reliability, low operating cost and long life of the equipment.

The most common applications are for air conditioning in commercial buildings such as offices, schools, hospitals, hotels, malls, large shopping centers, airports, military bases, supermarkets, etc. For other applications see our Process Cooling Chiller line.

By using Bitzer scroll compressors with external VFD (Variable Frequency Drive) on the first compressor, we convert this unit into an incredible VRF (Variable Refrigerant Flow) system resulting in a greater adaptability to the thermal load, stabilizing the fluid temperature and maximizes energy savings at partial load.

Standard ambient operating temperature range: +110°F (+43.3°C) to +40°F (4.4°C)
Extended ambient operating temperature range: +125°F (+51.7°C) to -20°F (-28.9°C)*
**See optional packages.*

Application / leaving fluid temperature range: +56°F (+13.3°C) to +18°F (-8.0°C)

AIR CONDITIONING (HVAC) FOR BUILDINGS, SUPERMARKETS, ETC.

STANDARD FEATURES & BENEFITS:

- Tandem or trio configuration of Bitzer scroll compressors for better capacity control and high efficiency operation at part load.
- Innovative modular design, aluminum frame with galvanized steel reinforcement, high efficiency condenser with strong structure and aluminum micro-channel coil, less weight and size; reduces transport, assembly and construction costs.
- Built-in, 8" Victaulic connection manifold to easily join units and create a set, simplifying installation.
- Eco-friendly; Micro-channel Air cooled condenser coil with reduced internal volume, along with the incorporated refrigerant distributor in our innovative, high-efficiency, Direct Expansion (DX) shell-U-Tube type evaporator with built-in refrigerant distributor, reduces the refrigerant charge between 25% to 30% compared to Chillers from similar efficiency.
- Wide range of applications for water or glycol.
- Quiet, high efficiency, external rotor motor, two speed, AC type axial fans for a better operation.
- Built-in, high efficiency, shell-U-Tube type, double pass, Direct Expansion (DX) Evaporator with built-in refrigerant distributor provides a significant refrigerant charge reduction.
- Electronic expansion valve, liquid sight glass and solenoid valve.
- Mechanical flow switch.
- Liquid drier with replaceable core and inlet ball valve.

DESIGNED • ENGINEERED • ASSEMBLED IN THE USA

c UL us LISTED 508A

ECOFriendly BY FRICONUSA

POWERED BY: Bitzer

STANDARD FEATURES & BENEFITS (CONT.):

- Flexible joint on discharge line.
- Refrigerant: R-410a
- Factory pre-charged and individually tested.
- UL 508A listed built-in electrical control panel.
- Compressor and fans circuit breakers.
- Voltage and phase-loss monitor with protection module for each compressor.
- Control: 208-230V / 1PH / 60HZ
- Power supply voltage 460V / 3PH / 60HZ with single point power connection.
- Electronic Control System; compressors and condenser fans operational management: alarms, measurement of pressure and temperature variables, 132x64 LCD backlit built-in display with 6-button keypad. Alarm management: 3 alarms for compressors (overload, high/low pressure) and 1 overload alarm for condenser fans.
- Fixed high and low pressure controls on each circuit.
- BMS (Building Management System): ModBus protocol for supervisor or HMI (Human Machine Interface).
- 1-year warranty.

STANDARD OPTIONS:

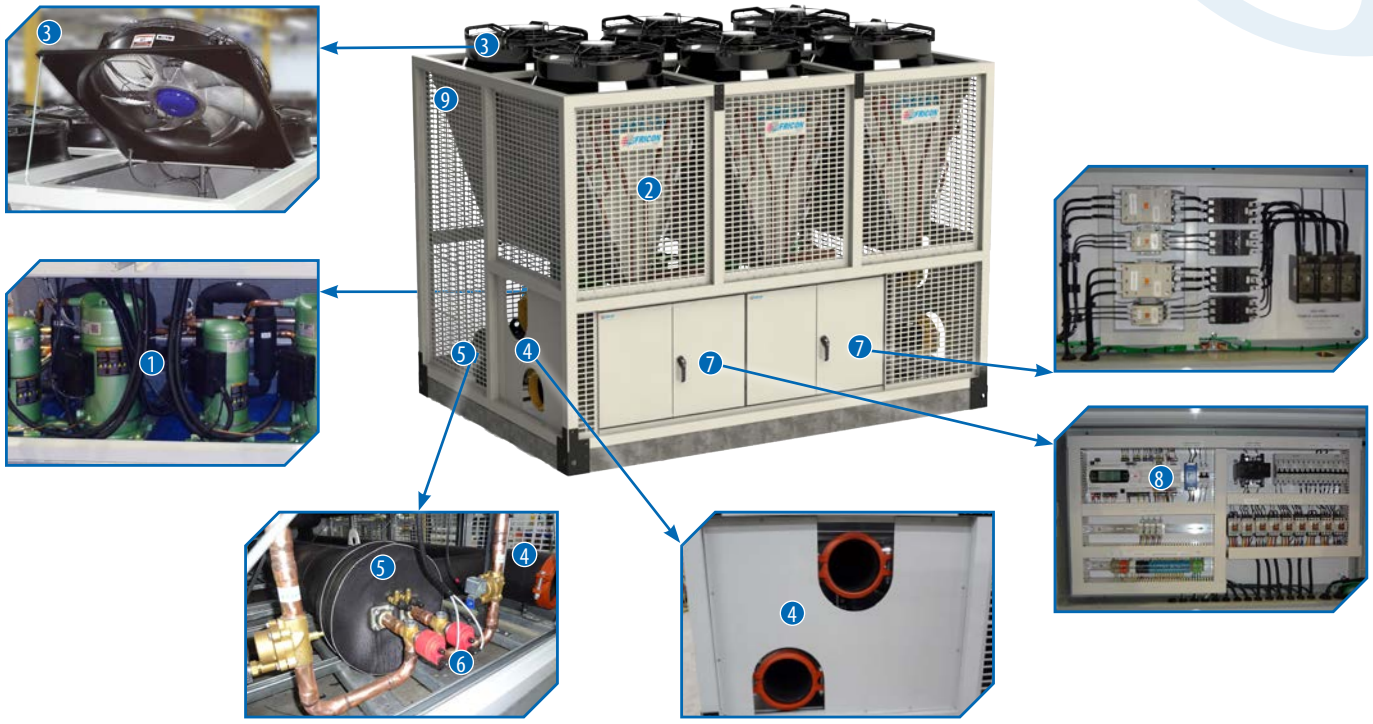
- Condenser coil with E-Coating for greater resistance to corrosion.
- Protective mesh for the condenser.
- EC type fans with variable speed (for 575V a VFD is used).
- Evaporator option:
  - Remote evaporator
- External Hydronic Package with TEFC type motors with NEMA 3R control panel:
  - 1 recirculation pump
  - 1 recirculation pump with VFD
  - 2 recirculation pumps
  - 2 recirculation pumps with VFD
- Different power supply voltage.

ADDITIONAL OPTIONS:

- VRF (Variable Refrigerant Flow) package to maximize the efficiency and capacity adaptability to the demand:
  - VRF-II*: VFD (Variable Frequency Drive). Infinite capacity control on the lead compressor in each circuit (60~125%).
    **Certain limitations apply.*
- HGB (Hot Gas Bypass) package for adjustable capacity reduction (10~100%):
  - HGB-I: PWM (Pulse Wide Modulation).
  - HGB-II: Continuous Modulation with electronic hot gas valve.
- CAIP (Compressor Acoustic Insulation Package) for better soundproofing:
  - CAIP-I: Fully enclosed metal compressor box with access door and internal convoluted acoustic foam panel lining.
- Pivoting fan assembly for easy maintenance.
- Refrigerant and oil evacuated for non-hazardous shipping.
- LAOP (Low Ambient Operation Package) required for operation below +40°F:
  - LAOP-I: +110°F (+43.3°C) to +10°F (-12.2°C), Includes: split condenser with variable speed fan on the first fan section and electrical antifreeze heater on the evaporator.
  - LAOP-II: +110°F (+43.3°C) to -20°F (-28.9°C), Includes: same as LAOP-I plus liquid receiver and flooded condenser with head pressure control valve.
  - LAOP-III*: +110°F (+43.3°C) to -35°F (-37.2°C), Includes: same as LAOP-II plus insulated liquid receiver with electric heater, thermally insulated compressor cabin and control panel with ventilated heating.
    **Requires CAIP (Compressor Acoustic Insulation Package)*
- HAOP (High Ambient Operation Package) required for operation above +110°F:
  - HAOP-I: +125°F (+51.7°C) to +40°F (4.4°C), Includes: control panel air extractor fan of and filter for air intake.
- MDS (Main Disconnect Switch)
- Electronic Control System:
  - BACnet Communication board.
  - Remote LCD display.
  - Local or remote touch screen display.
  - Energy Management Module.
  - CHSM (Chiller System Manager) controls the sequence between multiple sets.
- Extended 5-year warranty on the compressor(s) (U.S. Only).

REFERENCE

1. Compressor(s)
2. Micro-channel condenser
3. Fans (optional pivoting assembly)
4. Victaulic connection manifolds (Fluid inlet/outlet)
5. Shell-U-Tube evaporator
6. Electronic expansion valve
7. Electrical control panel
8. Electronic Control System
9. Protective mesh (optional)



SUBJECT TO CHANGE ACCORDING TO ACCESSORIES/OPTIONS. PLEASE CONSULT THE FACTORY FOR SPECIFIC INFORMATION.

NOMENCLATURE

MODEL

FLCH	8S	A.1	A	1450	M	2	1	1	0	41	2

F: FRICONUSA
L: LARGE-SIZED
CH: CHILLER

SERIES
8S: 8 SERIES, STANDARD

CONDENSER TYPE & VERSION
A: AIR COOLED, 1: VERSION 1

APPLICATION / LEAVING FLUID TEMPERATURE RANGE
A: AIR CONDITIONING: +56°F (+13.3°C) TO +18°F (-8.0°C)

SIZE / CAPACITY
SEE TECHNICAL DATA TABLE FOR SELECTION

CHARACTERISTIC
M: MASTER **S:** SLAVE

COMPRESSOR BRAND & TYPE
2: BITZER SCROLL **S:** SPECIAL COMPRESSOR

VOLTAGE
1: 208-230V / 3PH / 60HZ **5:** 380V / 3PH / 50HZ
2: 460V / 3PH / 60HZ **9:** 380V / 3PH / 60HZ
3: 575V / 3PH / 60HZ **S:** SPECIAL VOLTAGE
4: 220V / 3PH / 50HZ

REFRIGERANT
41: R-410A **SR:** SPECIAL REFRIGERANT

OPTIONAL EXTERNAL HYDRONIC PACKAGE* INCLUDES TEFC TYPE MOTORS AND NEMA 3R CONTROL PANEL:
0: NONE **3:** 2 RECIRCULATION PUMPS
1: 1 RECIRCULATION PUMP **4:** 2 RECIRCULATION PUMPS W/VFD
2: 1 RECIRCULATION PUMP W/VFD **S:** SPECIAL HYDRONIC PACKAGE
** HYDRONIC PACKAGE FOR MASTER UNIT ONLY. IF SELECTED TOGETHER, REMOTE EVAPORATOR & HYDRONIC PACKAGE ARE BUILT ON ONE FRAME FOR INDOOR USE.*

EVAPORATOR OPTION
1: BUILT-IN, DX SHELL & TUBE **S:** SPECIAL EVAPORATOR
2: REMOTE, DX SHELL & TUBE

CONDENSER, PROTECTION OPTION & FAN TYPE
1: MCHX & AC FAN
2: MCHX WITH E-COATING & AC FAN
3: MCHX & EC FAN
4: MCHX WITH E-COATING & EC FAN
5: MCHX WITH MESH PROTECTION & AC FAN
6: MCHX WITH E-COATING, MESH PROTECTION & AC FAN
7: MCHX WITH MESH PROTECTION & EC FAN
8: MCHX WITH E-COATING, MESH PROTECTION & EC FAN

TECHNICAL DATA - APPLICATION / LEAVING FLUID TEMPERATURE RANGE

R-410a

A: AIR CONDITIONING: +56°F (+13.3°C) TO +18°F (-8.0°C)

MODEL		COMPRESSORS BITZER SCROLL							FAN		CAPACITIES IN TR @ 95°F AMBIENT R410A LEAVING FLUID TEMPERATURE								ELECRICAL DATA 60HZ									MECHANICAL DATA										
												WATER			GLYCOL 20%		GLYCOL 30%			230 VOLT			460 VOLT			575 VOLT			OPTIONAL CENTRIFUGAL PUMP				CONNECTIONS	REFRIGERANT CHARGE		APROX DRY WEIGHT.		FRAME TYPE
SIZE		CONFIGURATION PER CIRCUIT							QTY	AC TYPE									RLA COMP.		SYSTEM MCA	RLA COMP.		SYSTEM MCA	RLA COMP.		SYSTEM MCA	HP	HEAD PRESSURE PSI	FLOW							
UNIT	HP	QTY	HP	MODEL	HP	MODEL	CKT		CFM		56°F	50°F	44°F	38°F	35°F	29°F	23°F	18°F	1	2		1	2		1	2			GPM	M3H	In/ Out in.	LB	(KG)	LB	(KG)	
											13.3°C	10.0°C	6.7°C	3.5°C	1.8°C	-1.5°C	-4.8°C	-8.0°C																	
A-0900	100	4	25	GDS 80295VA	25	GDS 80295VA	2	6	87000	CAP.	103.7	**95.7**	**87.3**	80.3	**73.0**	66.2	**59.8**	**54.3**	85	85	413	41	41	197	33	33	160	10	Up to 35	230	63	8" Victaulic	96	(43.5)	6,441	(2,928)	A
										EER	11.2	**10.5**	**9.7**	9.2	**8.4**	7.7	**7.0**	**6.5**																		
A-1050	114	4	32	GDS 80385VA	25	GDS 80295VA	2	6	87000	CAP.	116.8	**107.8**	**98.5**	90.5	**82.2**	75.2	**68.0**	**61.8**	106	85	461	53	41	226	43	33	182	10	Up to 35	259	71	8" Victaulic	108	(49.0)	6,465	(2,939)	A
										EER	11.0	10.4	**9.6**	9.0	8.3	7.7	7.1	6.6																		
A-1200	128	4	32	GDS 80385VA	32	GDS 80385VA	2	8	116000	CAP.	136.5	**125.0**	**114.8**	104.7	**96.0**	87.0	**78.8**	**71.2**	106	106	519	53	53	261	43	43	209	15	Up to 40	300	82	8" Victaulic	125	(56.8)	7,557	(3,435)	B
										EER	11.8	10.9	**10.3**	9.5	8.9	8.2	7.5	6.8																		
A-1300	140	4	35	GDS 80421VA	35	GDS 80421VA	2	8	116000	CAP.	146.8	**134.2**	**123.5**	112.5	**103.0**	93.3	**85.2**	**76.8**	103	103	505	51	51	254	41	41	203	15	Up to 40	322	88	8" Victaulic	134	(61.0)	7,598	(3,453)	B
										EER	11.3	10.5	**9.9**	9.1	8.5	7.8	7.3	6.6																		
A-1450	160	4	40	GDS 80485VA	40	GDS 80485VA	2	8	116000	CAP.	159.7	**147.5**	**136.0**	124.2	**114.0**	103.7	**94.7**	**85.5**	128	128	612	64	64	308	51	51	246	15	Up to 35	354	97	8" Victaulic	148	(67.0)	7,767	(3,530)	B
										EER	10.7	**10.1**	**9.6**	8.8	**8.3**	7.7	**7.2**	**6.5**																		
A-1700	178	6	32	GDS 80385VA	25	GDS 80295VA	2	10	145000	CAP.	190.5	**175.5**	**160.3**	147.2	**134.8**	122.2	**110.7**	**99.8**	106	85	684	53	41	338	43	33	271	15	Up to 35	385	105	8" Victaulic	176	116.6	9,235	3,266	C
										EER	11.5	10.9	**10.0**	9.4	8.8	8.1	7.4	6.8																		
A-1800	192	6	32	GDS 80385VA	32	GDS 80385VA	2	10	145000	CAP.	203.8	**187.8**	**172.7**	158.5	**144.0**	131.7	**119.2**	**107.5**	106	106	748	53	53	375	43	43	301	15	Up to 35	414	113	8" Victaulic	188	125.6	9,309	3,319	C
										EER	11.3	10.7	**10.1**	9.5	8.7	8.1	7.4	6.8																		

Compressor RLA: Rated Load Amperage (RLA)estimated to the full load of the compressor RLA = Maximum Continuous Current (MCC) /1.56
Compressor MCC: Maximum Continuous Current (MCC) of the compressor(s)

MCA: Minimum Circuit Amperage (MCA) = RLA of the largest compressor X 1.25 + SUM RLA others compressor(s) + Total FLA Fans +Control panel load
FLA Fan: Full Load Amperage (FLA) of the fans

CAPACITY CORRECTION FACTORS

Ambient Temperature in °F	60	65	70	75	80	85	90	95	100	105	110	115*	120*	125*
Capacity Factor R-410A	1.28	1.25	1.22	1.19	1.15	1.10	1.05	**1.00**	0.98	0.96	0.92	0.88	0.84	0.8

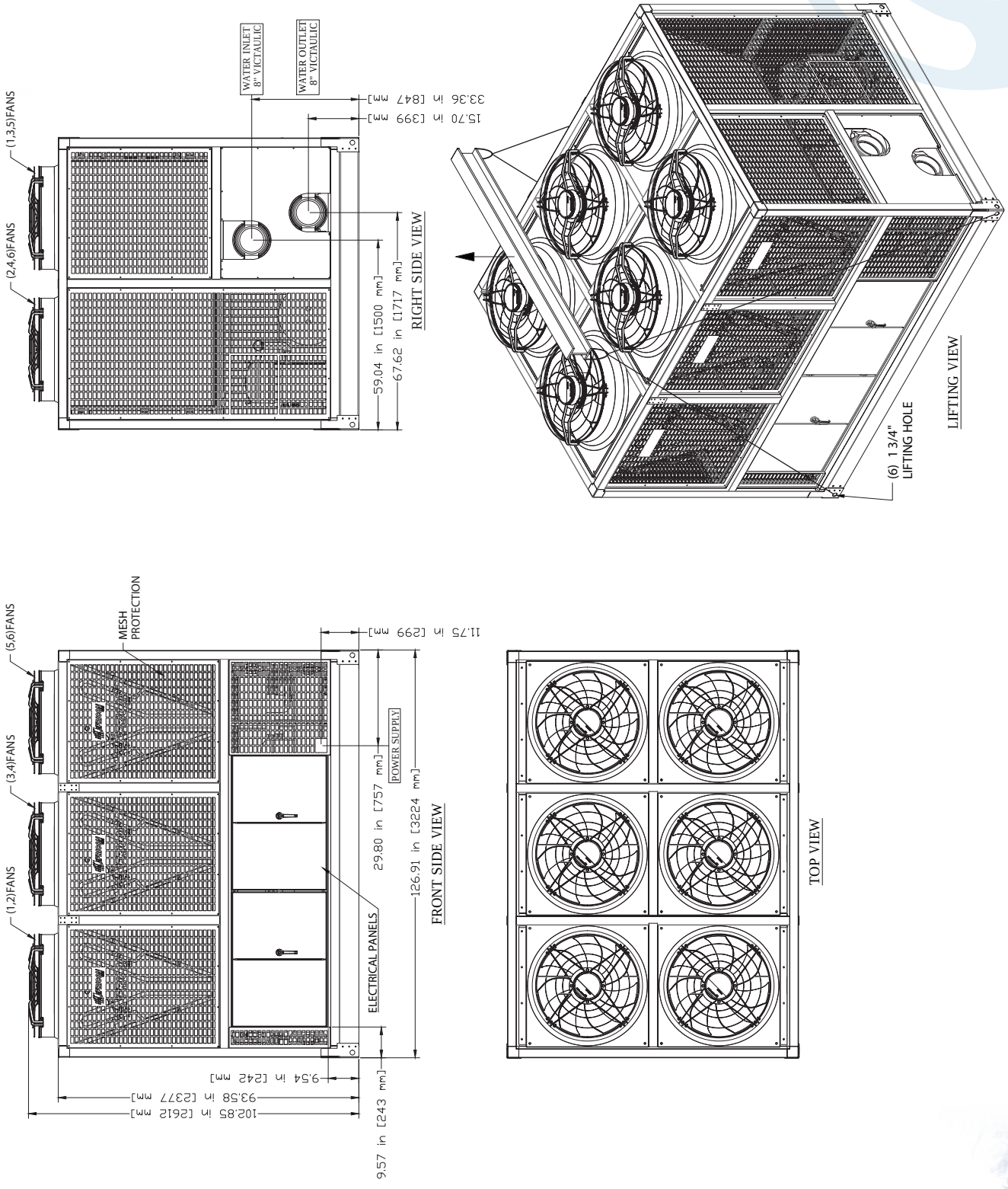
HAOP (High Ambient Operation Package) required for operation above +110°F

‡ Multiply capacity by .83 when used with 50 Hz power.

All capacities are calculated at 20°F return gas temperature and dew point values

FRAME TYPE / DRAWING REFERENCE

A) 6 fans (800mm)



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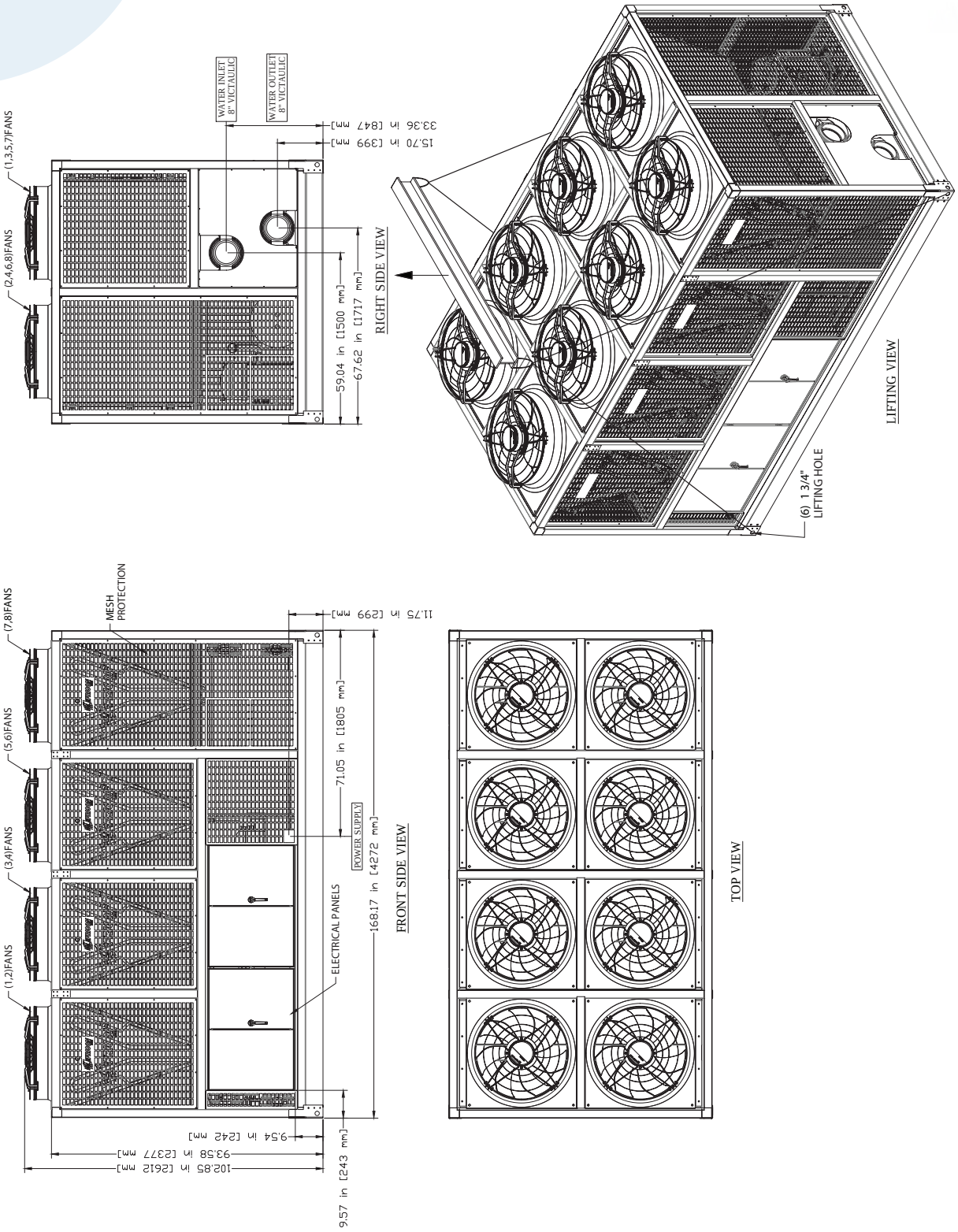
FRAME TYPE / DRAWINGS REFERENCE

B) 8 fans (800mm)



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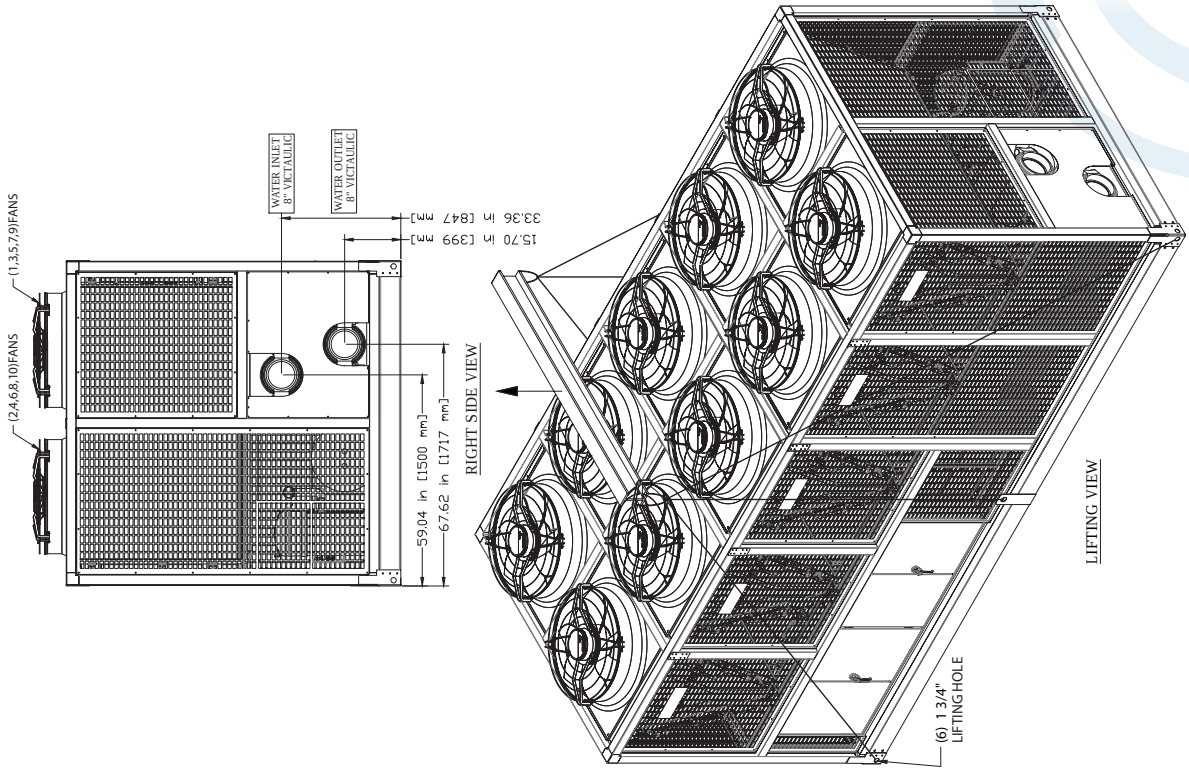
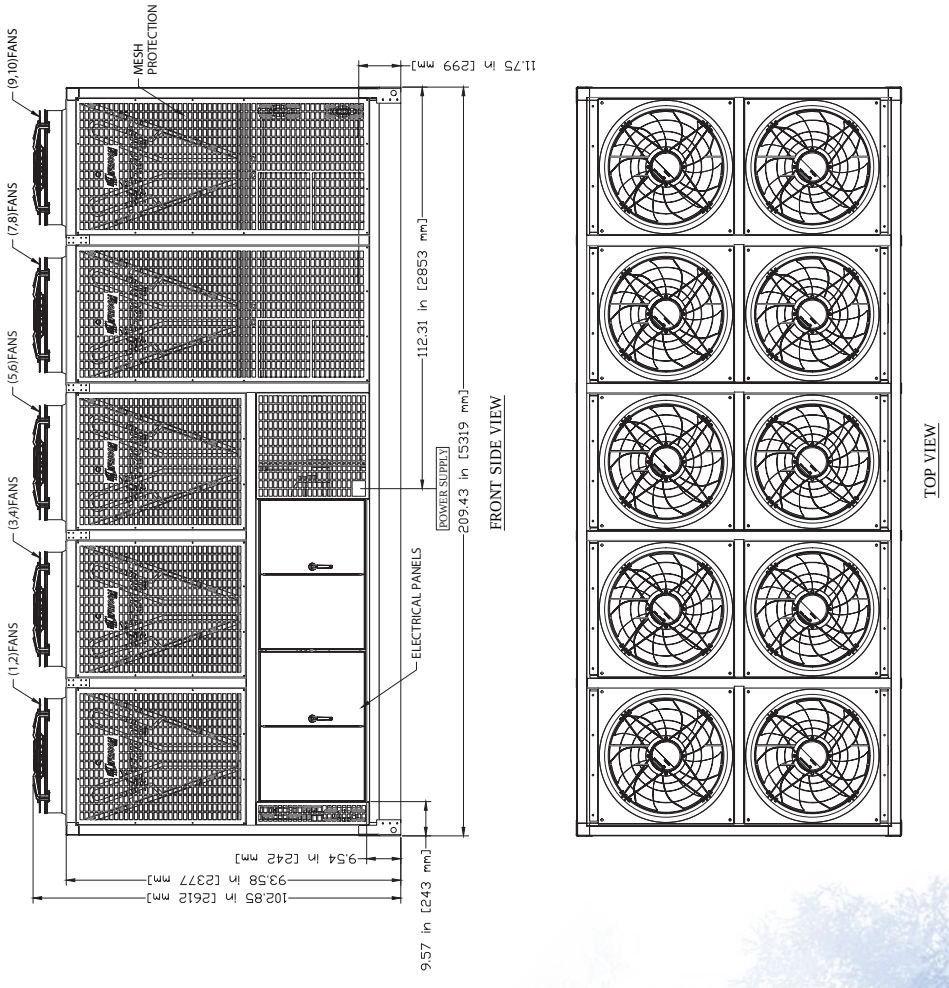
FRAME TYPE / DRAWINGS REFERENCE

C) 10 fans (800mm)





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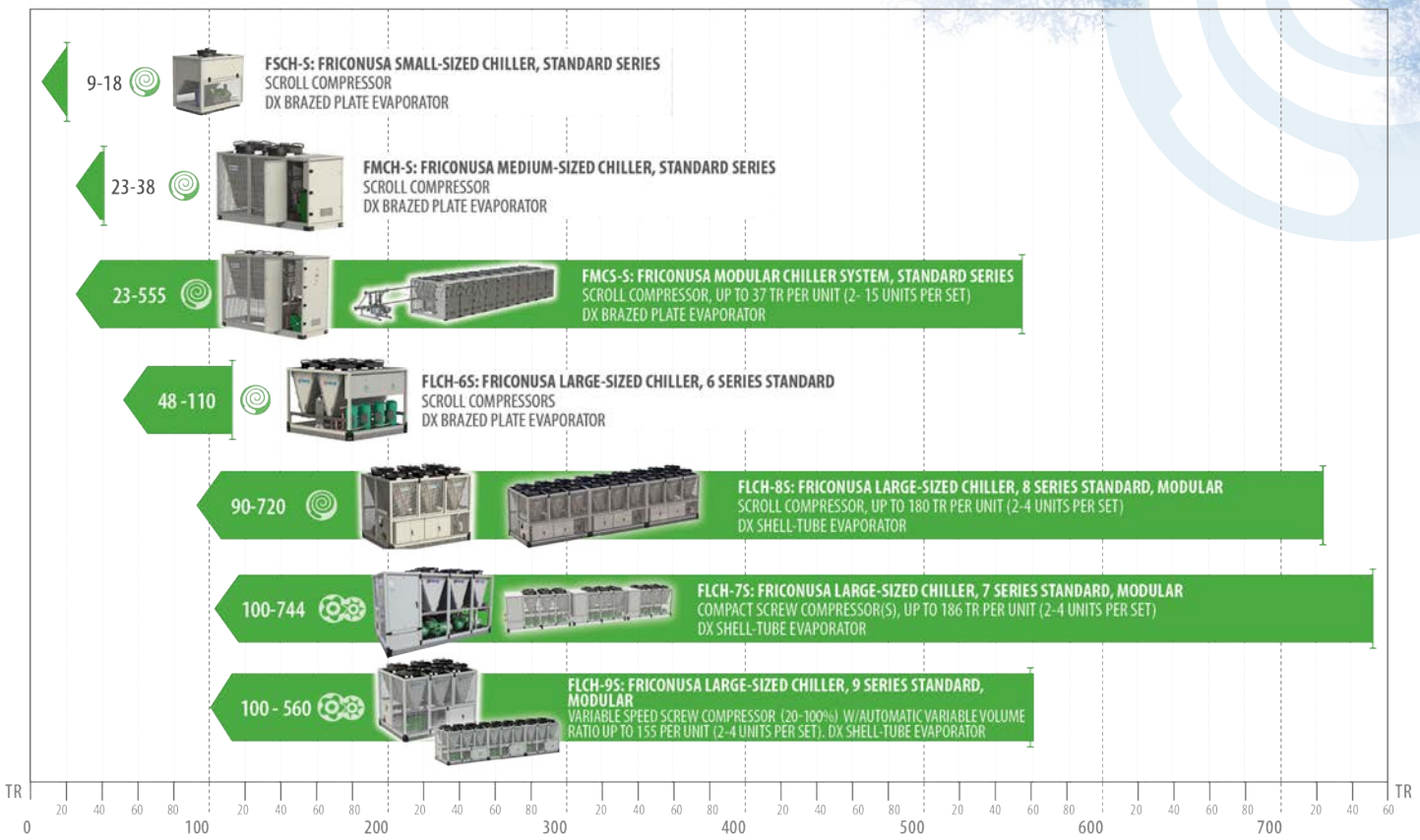
FRICONUSA AIR COOLED CHILLERS

AIR CONDITIONING LINE



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